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SOUTH AMERICAN ARROW POISONS.

IT IS well known that under the name curare, or woorari, quite a number of different crude extracts, prepared by the natives of tropical South America east of the Andes, reach us, some of them being found exceedingly active, usually containing an alkaloid, no doubt derived from one of the plants entering into their preparation; while others are practically inert, probably due to their having spoiled by long keeping. Some years ago the unfortunate French traveller Crévaux described the preparation of a very active kind of curare, having witnessed it among the natives of French Guiana (see NEW REMEDIES, 1881, page 1). Another account, by Paul Marcoy (in his "Travels in South America," 4to, London, 1875, ii., page 303, etc.), which has not found its way into professional journals, may prove of interest.

The poison made by the Yahuas is as active as that of the Ticunas, although in the markets of the Upper Amazon their selling price is different. Thus the poison of the Yahuas costs only 12 reals for a pot containing a pound, whilst that prepared by the Ticunas sells at 3 piastres. Some explain this difference of price between the two products by a difference in the time they keep; the poison prepared by the Yahuas, they say, scarcely retains its virtue to the end of a year, whilst that made by the Ticunas is as effective at the end of two years as at first. Among the riverside inhabitants of the Amazon, with whom the blowing-tube takes the place of a gun, these poisons, of which the *wourali* and *curare* are only counterfeits, replace advantageously the powder and lead of the European sportsman.

South American Indians hunting with the Blow-gun and Poisoned Arrows.

More than one traveller, whose names have escaped me, speak of the composition of this poison. In addition to their explanatory statements, they have informed us that the savages, instead of preparing it in their huts, go into the depths of the forest for that purpose, in order to guard the secret from the eyes of the curious. Not knowing what to think of this statement, I begged Father Rosas to use his influence with the Yahuas in order to arrive at an exact knowledge of the fact.

The Yahua to whom he addressed himself courteously offered him a small pot of his poisoned pomade, but refused to let him know of what drugs it was composed and how he prepared it. The monk tried to seduce him by the gift of a knife (*eustache*) with a handle of yellow wood, but the discretion of the savage was proof against such a trifle. He laughed in the monk's face and turned his back upon him.

A second individual showed himself more communicative, dazzled as he was by the offer of a table knife which the missionary had substituted for the clasp knife previously tendered. This fellow spoke of a shrub and a liana, but he refused to indicate their species or explain the manner of using them.

More than an hour was spent in negotiating this affair. In place of the single knife presented to him at first, the monk now offered him three. The temptation was too strong for the moral force of the savage. Two Yahuas, the father-in-law and son-in-law, succumbed at once, one promising to bring me a branch of the shrub in question, the other a stem of the liana. This was something, doubtless; but the nearer I drew to my end the more exacting I became. I requested them to let me have some flowers or fruits of these vegetables: they replied drily that it was not the season.

Although obedient to the periodical law of vegetation, the forests of South America are accustomed to the enjoyment of certain privileges unknown to those of Europe. Whilst the mass of vegetation flourishes and fructifies at a determined epoch, some individuals blossom and bear fruit before or after the season. It was upon these precocious or tardy vegetables that I calculated for the success of my negotiation. After a discussion which

nded in my favor, the two Yahuas set out and did not return until the next day, when they told me they had travelled forty-five miles through the woods to find the flowers and fruits I required. One of them presented me with a slender branch of a shrub having oblongated leaves, opposed and veined like those of the Melastomaceæ. From the fork of one of the branches hung a cluster of fruit like that of the *ubilla*. Each fruit, of the size of a very small grape (*chasselas*), was formed of a ligneous shell, dehiscent and of the color of yellow ochre, with an exterior velvety coat, exposing to view when open four seeds or stones in their cells, almost like those of the raisin. The other Yahua brought me a stem of a flat liana, 2 Cm. in thickness and 20 broad, with a fine and whitish-colored bark which reminded me of the silver birch. This liana was destitute of leaves, but it bore below a fragment of ligneous tendril of the size of one's little finger, three great flowers of the same kind as the leguminous Papilionaceæ—a *Dolichos*, perhaps—the inferior alæ or carina of a pinky whiteness, the wings of a rosy lilac, and the standard a violet purple. I had now but one more wish to gratify—that of knowing how to make use of these treasures. This desire was such an enormity in the eyes of the Yahuas that they taxed my reverend friend to the amount of eight fish hooks before they consented to reveal the mysteries of their cuisine.

One of them fetched an earthen pot of a middle size, which to all appearance had never before been used, and filled it with water. The other heaped up around it a quantity of little branches, which he kindled with a little handful of a peculiar tinder.* This done, the first, who was the father-in-law and who alone meddled with the preparation of the poison, leaving his son-in-law to attend to the fire, threw into the water the leaves and the stem, cut into small bits, of a branch similar to that which had been brought to me, the fruit being useless to the operation. When the water commenced boiling it first turned yellow and soon afterwards the color of rust. When the boiling had been continued for two hours, the Yahua took the sediment of the leaves and the wood out of the pot, threw it aside, and scraped into the mixture the bark of the liana with violet flowers, including the inner membrane or liber. A brisk fire was kept up, and a thick scum formed again and again as often as it was removed by the operator with a wooden spatula with which he stirred the mixture.

When this part of the process was accomplished to his satisfaction, he took from a calabash three little packets made of the leaves of the American cane and tied with a thread of bark, undoing which he emptied the contents of each into the pot. One of these packets, he told us, contained the bruised and pulverized stings of a certain species of ray—the *dari-dari*—fished in the Içá; the second held an assortment of the glands and fangs of venomous serpents, dried and reduced to powder; the third some thousands of corpses of the *tasua-pira*, or fire-ant. On hearing this foreign name I did not feel the surprise that might have been expected. During my residence at Nauta I had made the acquaintance of the charming little monster, and the cramps and pains that had resulted from my indirect relations with him were fresh in my memory. It sufficed for that to have walked barefoot over the trunks of fallen trees at a place where the *tasua-pira* had passed, leaving behind it a caustic slime, the action of which upon the skin may be compared to that of cantharides pickled in sulphuric acid.

The poison, seasoned with various ingredients, was cooked for at least two hours longer, having previously been three hours over the fire. It now assumed the consistence and color of molasses, on perceiving which the Yahua lifted it quickly from the fire, and, without giving it time to cool, put over the mouth of the pot two sticks crosswise, on which he placed a leaf of heliconia and then covered it with earth.

The next day the pot was broken, and the poison, which had become hard, was turned out like a lump of black wax weighing about 4 pounds. To soften it for the purpose of dipping the arrows it is sufficient to bring it near the fire.

The active qualities of this poison are of short duration. After a year or eighteen months, instead of remaining black and unctuous, it becomes grayish and brittle, and is covered with a kind of mould, when it is only fit to be thrown away. The natives are able to tell at a glance, within a fortnight or so, how long previously a pot of the poison had been prepared, and even to name the tribe who had manufactured it. It is prepared in the forest because the necessary combustibles abound there, and the labor of carrying them home from a distance is thus avoided.

*Called in the country ants'-tinder—*yesca de hormigas.* It is a viscous substance, of a pale reddish color, secreted by a variety of these hymenoptera. They stick the branches of a tree together with it, at some yards above the ground, filling up the spaces, and forming the enormous pellet which constitutes their nest or ant-hill. This matter, almost as soon as it is produced in contact with the air, becomes dry, soft, spongy, and holds fire like true tinder.

Artificial Camphor.

THE artificial production of ordinary camphor has long been accomplished, at least on a small scale, by means of oxidizing camphene or substances containing this, or allied terpenes.

Quite recently J. E. Marsh and J. A. Gardner have published new researches on terpenes (*Journ. Chem. Soc.*, vol. lix., p. 648) in which they announce a method of producing camphene on a large scale. The method is essentially that originally proposed by Wallach (heating 1 part of pinene hydrochloride—or turpentine hydrochloride—with an equal part of anhydrous sodium acetate and 2 parts of glacial acetic acid during three or four hours, then distilling with water). Instead of heating the mixture in glass tubes, the above-named chemists used a large copper autoclave, which is not attacked by the acetic acid. For heating the autoclave a bath of pitch was used, which can easily be heated to 250° C., the temperature required, without danger, smell, or inconvenience. The crude camphene obtained is separated from the other product (viz., acetate of borneol), and from unaltered hydrochloride of turpentine, partly by distillation with steam. On rectifying, it at once solidifies in the cold.

Riban states that when camphene is oxidized by potassium dichromate and sulphuric acid it yields camphor. Marsh and Gardner, however, are unable to confirm this. From 17 Gm. of camphene, boiled during eighteen hours with 57 Gm. of potassium dichromate, 70 Gm. of sulphuric acid, and 140 Gm. of water, they obtained 12 Gm. of a solid which certainly had the smell of camphor, but which proved, on distillation, to be unaltered camphene. Nitric acid was also found to be incapable of producing camphor from it.

Although the conversion of camphene into camphor has, so far, been impracticable on any but an experimental scale, an important step towards the manufacture of genuine camphor by synthesis has been made through the new process above described. It may not be long when we shall no longer be dependent upon Japan and China for our supplies of camphor.

Preparation of Oxygen Gas for Experimental Purposes.

G. KASSNER recommends to utilize the reaction between barium peroxide and potassium ferricyanide—whereby oxygen is liberated—in the following manner:

Keep ready prepared a "milk" of barium peroxide and water. This should be at least a few hours old, so that the peroxide may be converted entirely into a hydrate. When oxygen is wanted the ferricyanide is added, either in form of a concentrated solution or in form of small crystals. The former produces an instantaneous rush of oxygen; the latter (crystals) cause a more steady, uniform evolution of gas.—*Zeitsch. f. angew. Chem.*

Oxin.

THIS very suggestive name has been given in France to a new meat preparation obtained from lean beef, which is reduced to a fine pulp, then mixed with sugar, and subjected to constant agitation at a temperature of 40° C. The sugar is said to extract all the useful constituents of the beef. It is not stated whether the saccharine extract is separated from the fibrin or not.—After *Journ. de Méd.*

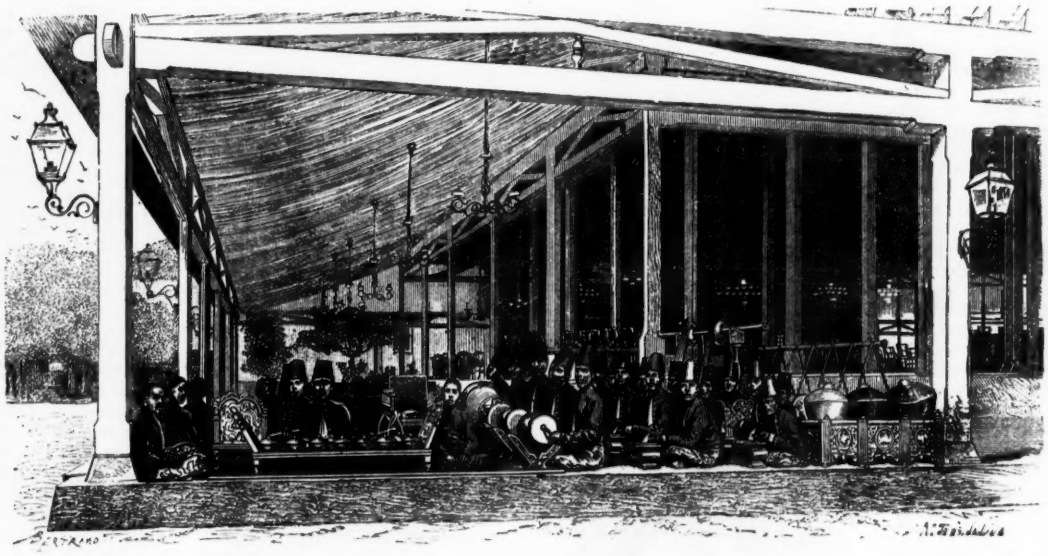
JAVA AND THE JAVANESE.

(Continued from p. 294.)

SAMARANG has an approach from the sea like that of Batavia—the same low and marshy shore. Indeed, this is characteristic of the entire northerly coast. The southern coast, on the contrary, is mountainous, and the billows of the Indian Ocean break upon its beach. Less than Batavia in size and beauty, Samarang is nevertheless a very handsome city. Its long avenues are not so wide, but more shaded. Its vegetation is more bushy, but less elegant. We find at Samarang beautiful houses surrounded by gardens with an air less manorial. The business portion has, like Batavia, its Chinese quarter and European offices, and in its suburbs the Arab huts and Javanese campongs. The population is sensibly different, owing to the greater proportion of Arabs. The hotels are dear and always full. The environs are unhealthy and permeated with the bad odors from the marshes, which are inundated at each tide. The only product of this region is the bamboo.

Five hours by rail from Samarang is Soerakarta, and about a half-hour brings one to firmer ground, but so irregular that the outlook is restricted. The forest here contains the teak, a wood much esteemed in India and the tropics for its durability. These forests, however well cared for, disappear, it is said in consequence of some unknown disease. From Soerakarta may be seen the three large volcanic mountains which occupy nearly the centre of the island—Lawoe, Mérapi, and Merbabou. It occupies a slightly undulating plain covered with scattered villages, which are enshrouded in verdure. Gigantic bamboos, breadfruit trees, cacaos, banyans, figs, bananas everywhere, in countless numbers. The soil is terraced in such manner as to secure the use of every drop of water required for irrigation, which is brought from a distance through little canals. Rice is a predominant crop, after which come sugar-cane, tobacco, manioc, and indigo. In one spot the green rice is just emerging from the water which covers the ground, and in the adjoining field women are picking the ripe grain stem by stem. Further on inundated plots, looking like terraced lakes, discharge their water in innumerable cascades upon the lower levels. Multitudes of laborers enliven the fields and myriads pass by upon the roadway: cutters of cane, planters of rice, drivers of carts, black buffaloes, and blonde zebus, backed by the children who care for them; little girls in costume of Eve watching flocks of geese. The twenty leagues of the route form a continuous panorama.

Solo, or Soerakarta, is the distinctively Javanese city. It is the holy city of the country, and the residence of the emperor and sultan descended from the emperors of Mataram. It is likewise the residence of the *Mangcounagoro*—the independent prince under the protection of Holland. The mercantile quarter resembles the corresponding portions of Batavia or Samarang; but if Batavia impresses one as being an immense park, and its surrounding villages as charming little groves, Soerakarta seems lost in the midst of a veritable forest. The streets are long avenues penetrating a tall forest of palms, breadfruit trees, and varingins, in which the houses disappear, and are separated from the roadway by canals of running water spanned by dilapidated bridges. The physiognomy of the streets is strange. Some are deserted, in others life is exuberant: venders, shaded by awnings or parasols, line the pathway and offer to the passer-by clothing, copper utensils, vegetables, fruits, beverages, and things unknown to strangers. Although the crowd be compact, it is respectful, and so indifferent of individuals that it is difficult to attract attention. Inquiry addressed to a woman regarding the wares exposed for sale elicited no reply, but only a lowering of her eyes, blushing cheeks, and an air of timidity. A surprising thing is the absence of other sound than the low murmur which belongs to a crowd in repose. There is no more sound of mirth among the children than of voice among adults. All go with bare feet and speak in low tones—they are a silent people.



The Gamelan.

It is upon the avenue of the palace, or Craton, otherwise known as the imperial residence, that one meets the official world and the dignitaries. Dressed in *sarrongs* more gay and jackets of finer cloth than those of the common people, the head surmounted by caps of glossy white, blue, or black silk shaped like a cake mould, the *kris* held by a rich girdle, these personages slowly and gravely advance, followed by attendants carrying a parasol which is green, yellow, or blue, according to rank, or of gold in the case of princes of the blood. Princes and high dignitaries, besides the obligatory accompaniment of parasols, have a more or less numerous escort of lances, and two pages or young girls carrying, one a copper spittoon, the other a gold box for betel. Upon the passage of a prince the Javanese bows low; for the emperor he prostrates himself in the dust. At night, owing to the absence of street lamps, the police regulations require every person to carry a light. The poor, in default of anything better for this purpose, carry a

lighted torch of dry wood. Great fire-flies contribute to the evening illumination their erratic curves of light. One of the interesting sights of the town is the tiger house. It is constructed of strong planks with intervals between them too narrow to admit the passage of an arm or paw. The tigers are destined for combat with buffaloes during the grand fêtes, and they are nearly always vanquished; they are also reserved for the *rampoc*, of which mention will be made hereafter.

The palace of the *Mangcou-nagoro*, or prince, is a city within a city. Surrounded by walls, flanked by barracks, divided into courts and gardens, it contains a population of officials, servants, and clients. Unmarried women alone perform the interior service. The entrance is into a vast court, at the farther extremity of which are two immense sheds or pavilions which adjoin each other. The first, the *dalem*, serves as an audience hall, and is preceded by a peristyle bearing the coat of arms of the prince. It is supported by thirty-four wooden columns with rings of gold, and is furnished with objects of art, sofas, and tables. In the evening it is lighted by twenty-five large chandeliers of kerosene lamps and by torches. Its pavement is marble. It has no local characteristics: furniture, bronzes, divans are all of European origin, but, open upon all sides, it forms a hall most appropriate to the climate. The second pavilion, in the rear of the other, is smaller and more retired. Its ornamentation, resembling that of the other, is much richer. Smyrna carpets, Japanese bronzes, Chinese porcelains, divans, crystals, paintings, and statuary compose the furnishing. The extremity is occupied by three rooms enclosed by glass, those at the sides being most simple, but the central one, entirely gilt, is a *chef-d'œuvre* of Japanese cabinet work. Its interior is unapproachable, and serves for the daughters of the prince as a counterpart of an American "bridal chamber" after their marriage. The remainder of the palace is composed of courts surrounded by galleries and chambers for the lodgment of the family and domestics, but its furnishing partakes too much of the character of European to be especially interesting. A notable feature of the palace, however, is the native orchestra of sixty performers, called a *gamelan*. The instruments are of copper in the form somewhat of the saucepans and other utensils used by cooks, and are of all sizes, from that which would suffice for a couple of eggs to that of the largest turbot-kettle series of copper plates from two inches to a yard in length, resting upon sculptured bronze supports; strips of sonorous wood arranged in a similar manner, and resembling the *marimba* of Central America; gongs, large and small, from a few inches to six feet in diameter; and, lastly, strangely shaped violins with two strings. Each performer is supplied with batons or wands with rubber balls for beating the instruments. During the performance the shrill and plaintive sound of women's voices is intermingled with the metallic notes of the instruments, and the general impression produced upon one accustomed to the music of Europe is that of its being more funereal than festive. With the first notes of the music, four lads advance, dressed in red breeches and bright-colored *sarrongs*, wearing the national weapon, the *kris*, with hilts of inlaid silver; their chests ornamented with large plaques of gold, and with a headdress formed of a Javanese handkerchief, the ends of which are arranged behind in shape of wings; their upper lips are blackened to imitate a moustache. Armed with lances, they execute a warlike dance in time with the music. Following them is a kris-dance by performers dressed in equally picturesque costumes. Then a dance with clubs and shields, the interchange of blows harmonizing with the sounds of the orchestra; a ballet of females, consisting mainly of posturing. Through all this music and movement, however, runs an air of profound melancholy which seems to characterize these people.

Dance of Lances.

The feast known as the *rampoc* may be thus described: Four ranks of Javanese, armed with strong lances from fifteen to eighteen feet in length, form a square of sixty to seventy-five yards upon each side. The first two ranks kneel, the others stand and form an impassable barrier. In the midst of the square is a bamboo cage covered with straw in which is confined a tiger; the half-open door is held only by a little cord. At a signal the orchestra strikes up a slow martial air, and two men with lighted matches fire the straw and retire slowly and in cadence with the music. During the burning of the straw the tiger bounds from side to side of the cage, seeking an exit, until the burning of the cord frees the door and he springs through the opening. Like the bull loosened in the arena, he stops, makes several attempts here and there, hesitates, and the direction he will finally take is uncertain

Attracted by the two men, who are still slowly retiring, he bounds towards them, but they disappear quickly among the lancers. Searching vainly for an avenue of escape, he finally approaches the lancers, and, crouching, with a desperate effort he makes a prodigious leap, attempting to break through the human wall, but falls transfixed by a score of lances upon which he has impaled himself. His savage cry is almost lost in the shouts of applause by the crowd of observers. The terrible blows of his paw shatter the lances like glass during his death struggles. Sometimes a tiger has been known to force the barrier of pikes and fall upon the opposite side, when it becomes necessary to pursue him among the wagons and frantic horses.

The Kris Dance.

New Wealth for California.

HOW THE CORK OAK FLOURISHES THERE.

EVERY year adds something to the diversity of the products of Californian soil and climate. Every fruit, flower, shrub, or tree known to the temperate zone finds here a genial abode, while semi-tropical and even tropical products vie with the hardier vegetation of the colder zones in the measure of their lusty growth and generous fruition. And now comes the cork tree to the front to claim its share of public attention as an important source of wealth, for future generations at least, in this land so favored by nature and so lavish in its rich gifts to man. That it will flourish and produce its velvety bark here in prolific perfection the evidences of many a tall and vigorous cork oak now growing in various localities in the State prove beyond doubt or cavil. That few among the earlier settlers in California may live to see the production of cork, as an article of manufacture and commerce, attain any considerable degree of importance may be true; but that it has become the bounden duty of present generations to plant the seed that posterity may reap the harvest is a proposition that no reasonable man will care to dispute.

So far, individual enterprise has established the fact that the cork oak (*Quercus robur*) has here found a congenial home. We have heard it stated that General Bidwell has recently sold in the San Francisco market a considerable quantity of cork bark of the finest velvety quality, the product of trees upon his property at Chico. In a recent visit to Ione, in Amador County, we saw a cork tree raised from an acorn planted thirty-two years ago by Mr. Surface, of that town, the bark of which, on cutting it away, seemed to be of the very best quality of "velvet cork," and would no doubt command a high price in the market. It would appear, therefore, that the soil and climate of California are better adapted to the growth of this tree than those of Spain and Portugal even; for there the first yield of cork bark "is rough, unequal, and woody in texture, is called virgin cork, and is useful only as a tanning substance, or for rustic work in conservatories, etc."

The fact, therefore, having been demonstrated that the tree will grow in California, and will produce as good, if not a superior bark to that elsewhere found, the question presents itself: What is the duty of the State, through its legislative and executive authority, in the matter of fostering the planting and cultivation of the cork tree?

If California is to become the great wine and brandy producing country that it promises to be, the question of the future supply of corks to meet the demand for home consumption alone becomes of the most serious importance. Moreover, the collateral question of creating a new product that is to increase the future wealth of the State adds largely to the magnitude of the subject under consideration. In the six years from 1880 to 1885, inclusive, Spain and Portugal exported manufactured and unmanufactured cork to the value of $23,658,453, besides what was used in home consumption to supply the large demand for wines, etc., produced in those countries. Why should not California take first place in the future in the product and manufacture of this important article of commerce, and so not only keep at home the large amount of money that will otherwise find its way abroad in the purchase of the foreign article, but also reap the harvest of profit that will be derived from its own exportations to supply the always growing demand of the world at large?

Creosote Pills.

V. TOBISCH recommends the following method of preparing these:

Mix 1 part of creosote with 2 parts of powdered licorice root (prepared from the *unpeeled* root), and let the mixture stand a few minutes. Then make a mass with water, using about 3 drops for every gramme of creosote. — *Zeitsch. allg. Oest. Ap.-V.*

[ORIGINAL COMMUNICATION.]

VOLUMETRIC DETERMINATION OF ACETATES.

Editors of American Druggist.

GENTLEMEN: In your issue of September 1st, to hand yesterday, I notice an article by Dr. Claude C. Hamilton on the volumetric determination of acetates, which appears to contain some gross errors; and as Dr. Hamilton has formulated the plan for the benefit of pharmacists, it is essential that all calculations and data be correct. It occurs to me that the fundamental error in Dr. Hamilton's article can be found on page 263, line 13 from the bottom, where he states "196+548=4,000 C.c. $\frac{N}{2}$ acid." If this had been made to read as it should be, 196+548=8,000 C.c. $\frac{N}{2}$ acid, some of the subsequent calculations would no doubt have been correct.

Although Winckler and a few others have endeavored to make the normal volumetric solutions of bibasic acids stronger, it is still the rule among chemists, both here and in Europe, to follow the views of Mohr, Fresenius, and Sutton, to prepare normal acids and other solutions for volumetric analysis upon the basis of one hydrogen equivalent. Normal H_2SO_4 then must contain 49.0 acid (=40.0 SO_3) in every liter, and $\frac{N}{2}$ acid should represent 0.0245 (=0.020 SO_3) in each cubic centimeter. Accordingly, the statement on page 264, lines 12 and 13 from the top, that "10 C.c. $\frac{N}{2}$ H_2SO_4 should exactly neutralize 10 C.c. volumetric solution of soda U. S. Ph.," cannot be verified, for 10 C.c. NaOH solution contain 0.40 NaOH, requiring 0.49 H_2SO_4, whereas 10 C.c. $\frac{N}{2}$ H_2SO_4 represent 0.245 H_2SO_4, or but one-half of the necessary amount. Also, if the example on page 263 should represent an actual analysis, something is radically wrong, for if 18 C.c. of true $\frac{N}{2}$ H_2SO_4 were needed to change the violet color to blue, then the Liquor Plumbi Subacetatis examined surely contains only 12.3 per cent of $Pb_2O(C_2H_3O_2)_2$ instead of 24.66 per cent. The error evidently lies in the factor employed by Dr. Hamilton: instead of 0.137 it should have been 0.0685, as can be proven by the equation on page 263, for if 548 $Pb_2O(C_2H_3O_2)_2$ require 196 H_2SO_4 for complete decomposition, 1 C.c. $\frac{N}{2}$ acid=0.0245 H_2SO_4 will decompose exactly 0.0685 of the basic lead salt. 196 : 548 :: 0.0245 : x. x = 0.0685.

It now also becomes necessary to change the values or weights on page 264, as otherwise any pharmacist assuming the stated figures to be correct would be continually in error with the result of his calculations after titration. Using the U. S. Ph. chemical formulas, I would say 1 C.c. $\frac{N}{2}$ H_2SO_4 equals

0.0680 $NaC_2H_3O_2 3H_2O$.
0.0490 $KC_2H_3O_2$.
0.059225 $Zn(C_2H_3O_2)_2 3H_2O$.
0.094625 $Pb(C_2H_3O_2)_2 3H_2O$.
0.0685 $Pb_2O(C_2H_3O_2)_2$.
0.0385 $NH_4C_2H_3O_2$.
0.3881+ $Fe_2(C_2H_3O_2)_6$.

I employ the formula and molecular weight of anhydrous ferric acetate, as the U. S. Ph. mentions the percentage of this salt present in the officinal liquor, and pharmacists should calculate accordingly.

Upon this basis the following quantities may be employed for determination, and each C.c. $\frac{N}{2}$ H_2SO_4 needed for complete decomposition of the salt will indicate exactly 1 per cent of the respective acetate:

6.80 Gm. Sodii Acetas.
4.90 " Potassii Acetas.
5.92 " Zinci Acetas.
9.46 " Plumbi Acetas.
6.85 " Liquor Plumbi Subacetatis.
3.85 " " Ammonii Acetatis.
3.88 " " Ferri Acetatis.
3.88 " Tinctura Ferri Acetatis.

A few words concerning the table on page 264 will not be out of place, for, even assuming the value of Dr. Hamilton's $\frac{N}{2}$ acid to be 1 C.c.=0.049 H_2SO_4, some of the data appear incorrect. We are directed to use 38.5 Liquor Ammonii Acetatis and 23.29 each of Liquor and Tinctura Ferri Acetatis for the determination of the respective acetates. With these amounts used, Dr. Hamilton claims that 1 C.c. of his $\frac{N}{2}$ acid will indicate 2 per cent of ammonium acetate and 1 per cent of ferric acetate. That such cannot be the case is easily shown, for

	$(NH_4C_2H_3O_2)_2$	+ H_2SO_4	= $(NH_4)_2SO_4$	+ $(C_2H_3O_2)_2$
2000 |	154	98	132	120
	0.077	0.049	0.066	0.060

Each cubic centimeter of Dr. Hamilton's $\frac{N}{2}$ acid will, therefore, decompose 0.077 $NH_4C_2H_3O_2$, and to show 100 per cent in 38.5 of Liquor Ammonii Acetatis would require 500 C.c. of the $\frac{N}{2}$ acid, instead of 50 C.c. as Dr. Hamilton assumes. Suppose 10 C.c. of $\frac{N}{2}$ acid are required to show the desired blue color; then, according to Dr. Hamilton's table, this would indicate 10 times 2 per cent, or 20 per cent acetate=7.70; but each cubic centimeter, as shown before, can decompose only 0.077 $NH_4C_2H_3O_2$, and, therefore, 10 C.c.=0.077×10 or 0.77—a remarkable inconsistency.

In the case of Liquor and Tinctura Ferri Acetatis the statements appear equally strange, unless Dr. Hamilton assumes the double atom of trivalent ferric iron as capable of displacing only 2 atoms of univalent hydrogen. Such an assumption would warrant the figures given in the table on page 264, but it seems hardly fair to charge such a blunder to the author of the paper. If, however, ferric iron asserts its true valence, we shall find that 465.8 $Fe_2(C_2H_3O_2)_6$ will require 3 times 98=294 H_2SO_4 for complete decomposition, and then 1 C.c. Dr. Hamilton's $\frac{N}{2}$ acid=0.049 H_2SO_4 can decompose only 0.07763 ferric acetate, anhydrous, and not 0.2329 as the table would indicate. Suppose 10 C.c. of the $\frac{N}{2}$ acid are required also in this case to show the desired blue color; this would indicate 10 times 1 per cent, or 10 per cent of acetate, which for 23.29 amounts to 2.329; but as 1 C.c. $\frac{N}{2}$ acid can decompose only 0.07763 ferric acetate, we have in reality 0.07763×10=0.7763, or about 3.33 per cent $Fe_2(C_2H_3O_2)_6$ instead of 10 per cent.

Dr. Hamilton's paper, having been read before the Missouri State Pharmaceutical Association and now printed in your journal, is likely to be followed by many pharmacists, some of whom may not take the trouble to verify all the calculations, and are, therefore, liable to arrive at erroneous results unless the errors be made known.

Very respectfully yours,

CHAS. CASPARI, JR.

MARYLAND COLLEGE OF PHARMACY,
BALTIMORE, September 5th, 1891.

P. S.—As you will note, the practicability of the plan has not been taken into consideration at all. I have simply endeavored to get at the correct calculations.

C. C., JR.

Administration of Creosote.

AMONG the methods proposed for disguising the disagreeable taste of creosote when in mixture, the following appear to be the most preferable (*Rép. de Pharm.*, September 10th):

1. *In Milk.*—Dissolve the creosote in a definite quantity of rum, or in alcohol of 60 per cent, and add a measured quantity of this, containing the proper dose of creosote, to warm milk strongly sweetened with sugar.

2. *In the following Mixture:*

		About:	
Creosote	10 Gm.	160	grains.
Alcohol, 80 per cent	250 "	10	fl.oz.
Glycerin	100 "	3	"
Syrup of Tolu	500 "	10	"
Cherry Laurel Water	70 "	2½	"
Water	70 "	2½	"

Dose: 10 Gm. (or about 135 minims), containing 0.10 Gm. (or 1.6 grains) of creosote. The proportions may of course be somewhat varied to accommodate themselves to our usual measures.

Peptonized and Other Sick Diet.

THE following recipes are taken from Dr. R. W. Burnet's exhaustive work on "Foods and Dietaries (or Manual of Clinical Dietetics)."* Some of these recipes are of a nature requiring not infrequently the advice or assistance of the pharmacist. For this reason they will be generally welcome:

Peptonized Beef Tea.—A pound of thinly minced lean beef is mixed with a pint of water, and 10 grains of bicarbonate of soda added thereto. The mixture is then simmered for an hour and a half in a covered saucepan. The resulting beef tea is decanted off into a covered jug. The undissolved beef residue is then beaten up with a spoon into a pulp and added to the beef tea in the covered jug. When the mixture has cooled down to about 140° F. (or when it is cool enough to be tolerated in the mouth), a tablespoonful of the liquor pancreaticus is added and the whole well stirred together. The covered jug is then kept under a "cosey" for two hours and agitated occasionally. At the end of this time the contents of the jug are boiled briskly for two or three minutes and finally strained. The product is then ready for use.

Peptonized Gruel.—Gruel may be prepared from any of the numerous farinaceous articles in common use—wheaten flour, oatmeal, arrowroot, sago, pearl barley, pea or lentil flour. The gruel should be well boiled and made thick and strong. It is then poured into a covered jug and allowed to cool until it becomes lukewarm. Liquor pancreaticus is then added in the proportion of a dessertspoonful to the pint of gruel, and the jug is kept warm under a "cosey" as before. At the end of a couple of hours the product is boiled and strained.

Peptonized Milk Gruel.—First a thick gruel is made from any of the farinaceous articles above mentioned. The gruel, while still boiling hot, is added to an equal quantity of cold milk. The mixture will have a temperature of about 125° F. To each pint of this mixture two or three teaspoonfuls of liquor pancreaticus and 10 grains of bicarbonate of soda are added. It is kept warm in a covered jug under a "cosey" for an hour or an hour and a half, and then boiled for two or three minutes and strained. If the product has too much bitter flavor a smaller quantity of the liquor pancreaticus must be used in the next operation. Invalids take this compound, as a rule, if not with relish, at least without any objection.

As it is impossible to obtain pancreatic extract of absolutely constant strength, the directions as to the quantity to be added must be understood with a certain latitude.

Peptonized Milk.—A pint of milk is diluted with a quarter of a pint of water, and heated to a temperature of about 140° F. Should no thermometer be at hand, the diluted milk may be divided into two equal portions, one of which is heated to the boiling point and added to the cold portion, when the mixture will be of the required temperature. Two teaspoonfuls of the liquor pancreaticus and 10 grains of bicarbonate of soda are then added to the warm milk. The mixture is poured into a covered jug, and the jug is placed in a warm situation under a "cosey" in order to keep up the heat. At the end of an hour or an hour and a half the product is boiled for two or three minutes. It can then be used like ordinary milk.

The object of diluting the milk is to prevent the curdling which would otherwise occur and greatly delay the peptonizing process. The addition of bicarbonate of soda prevents coagulation during the final boiling, and also hastens the process. The purpose of the final boiling is to put a stop to the ferment action—when this has reached the desired degree—and thereby to prevent certain ulterior changes which would render the product less palatable. The degree to which the peptonizing change has advanced is best judged of by the development of a peculiar bitter flavor which is always associated with the artificial digestion of milk. The point aimed at is to carry the change so far that the bitter flavor is just perceived but not unpleasantly pronounced.

Irish Moss.—Wash well an ounce of Irish moss, and then let it soak for four or five hours in a quarter of a pint of cold water. Add half a pint of milk and half a pint of water (or a pint of milk); boil from five to seven minutes, and strain through muslin. It may be flavored with cinnamon or vanilla, or simply sweetened with sugar, and when cool will set firmly.

Beef Tea.—Cut up a pound of lean beef into pieces the size of dice; put it into a covered jar with 2 pints of cold water and a pinch or two of salt. Let it warm gradually and simmer for a couple of hours, care being taken that it does not reach the boiling point.

Beef Essence.—Take 1 pound of gravy beef, free from fat and skin. Chop it up very fine, add a little salt, and put it into an earthen jar with a lid; fasten up the edges with a thick paste, such as is used for roasting venison in, and place the jar in the oven for three or four hours. Strain through a coarse sieve.

Calf's-foot Jelly.—Take two calf's feet, split them, boil them in 1 quart of water, skim them thoroughly, and let them simmer for about four hours. Strain, and when cold remove the fat. Put into a stewpan with 1 pound of sugar, the juice of six lemons, the rind of three, half a stick of cinnamon (bruised). Let this digest over a slow fire, and then add the whites of three eggs well whipped up with 5 ounces of water, and continue until it begins to boil. Add half a pint of sherry; allow it to simmer gently for another quarter of an hour. Strain through a jelly bag. Repeat the straining several times, and pour into moulds.

Wine Jelly.—Into an enamelled saucepan put a pint of cold water; add an ounce and a quarter of Russian isinglass and 3 ounces of sugar. Let this boil gently till the isinglass is dissolved, removing the scum from time to time. Strain, and add the juice of one lemon or of two oranges and a third of a pint of sherry. Pour into a mould and turn out when required.

Port Wine Jelly.—Put into a jar 1 pint of port wine, 2 ounces of gum arabic, 2 ounces of isinglass, 2 ounces of powdered white sugar, a quarter of a nutmeg grated fine, and a small piece of cinnamon. Let this stand closely covered all night. The next day put the jar into boiling water, and let it simmer till all is dissolved, then strain it, let it stand till cold, and then cut it up into small pieces for use (Ringer).

Milk, Egg, and Brandy.—Scald some new milk, but do not let it boil. It ought to be put into a jug and the jug should stand in boiling water. When the surface looks filmy it is sufficiently done, and should be put away in a cool place in the same vessel. When quite cold beat up a fresh egg with a fork in a tumbler with a lump of sugar; beat quite to a froth, adding a dessertspoonful of brandy, and fill up the tumbler with scalded milk.

Milk Lemonade.—To a pint of boiling water add 6 ounces of loaf sugar, 6 ounces of lemon juice, a like quantity of sherry, and 16 ounces of cold milk. Stir thoroughly and strain through a jelly bag.

Milk and Isinglass.—Dissolve a little isinglass in water, mix it well with half a pint of milk, then boil the milk, and serve with or without sugar, as preferred.

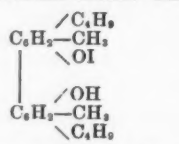
* In Wood's Medical and Surgical Monographs, vol. xi., No. 3.

Improvement in the Manufacture of Cod-Liver Oil.

PETER MOELLER, of Christiania, the well-known manufacturer of cod-liver oil, has obtained patents for an improved process of obtaining cod-liver oil free from the more or less rancid or fishy taste which accompanies the oil so commonly. The process is an old principle applied to this particular product. It consists in preventing the access of air during the trying-out of the oil, as it has been found that any rancidity is due to the oxidizing action of the air upon the fatty acids of the oil. The trying-out is carried on in specially constructed boilers through which a current of an indifferent gas (carbonic acid) is constantly passing. This displaces not only the air in the apparatus, but also that which is gradually given up by the livers themselves. When the trying-out is completed, the current of gas is maintained until the contents of the boiler are cold.

Europhen.

EUROPHEN (or iodo-di-iso-butyl-ortho-cresol), another new dermic remedy, is a substance formed by the action of iodine upon iso-butyl-ortho-cresol. Its formula is:



It appears as a fine yellow powder of an aromatic, saffron-like odor; insoluble in water and glycerin, readily soluble in alcohol, in ether, in chloroform, and in oil; percentage of iodine, 28.1. Europhen is permanent in the dry state; but when *heated* with water to 70° C. (158° F.), or if left in contact with *moisture* even at ordinary temperature, it gives off free iodine. Solutions and ointments of europhen should therefore be prepared in the cold. Its *oily* solutions should always be *filtered*, as a sediment—owing to the formation of a second iodine compound insoluble in oil, but not to the europhen itself—gradually deposits in them. According to the observations thus far made, europhen appears to be *non-poisonous*. Dr. P. J. Eichhoff, chief physician of the Hospital for Skin Diseases and Syphilis at Elberfeld, reports on 33 cases in which he employed europhen. These include ulcus durum, ulcus molle, condyloma, gonorrhœa, ulcus cruris, lupus, psoriasis, eczema, favus, and scrofuloderma. All the *venereal* cases were *favorably influenced* by the europhen, save gonorrhœa; the cases of *ulcus molle* were *promptly cured* by simply dusting with europhen in substance; *constitutional syphilis* in every form was benefited by the external application of europhen (in substance), as well as by subcutaneous injections of the latter remedy in oily solution (0.015–0.1 Gm. [¼–1½ grains] once daily).

Of the *non-venereal* affections, all were benefited by europhen (5–10% ointments), except eczema parasitarium, psoriasis, and favus.

Besides its non-poisonousness and freedom from disagreeable odor, europhen, according to Dr. Eichhoff, possesses the advantage over iodoform of great *attenuability*, owing to its lightness in weight; 1 part of europhen will cover as great a surface as 5 parts of iodoform.

[*Note.*—This substance is not to be confounded with euphorin (phenyl-ethylic-urethane).]—*Merck's Bulletin*, September, 1891.

Iodides of Antipyrine.

M. DUROY reports (*Bulletin de l'Académie de Médicine*) that he has obtained several iodides of antipyrine, all of which are capable of being used in therapeutics. The method of preparing an iodide of antipyrine is very simple. One equivalent of iodide dissolved in alcohol of 90°, and brought into contact with an equivalent of antipyrine dissolved in five times its weight of distilled water, yields a brick-yellow precipitate which is antipyrine iodide. It is soluble in two and a half times its weight of water at 25° C.

Preparation of Ammonium Sulphide.

ED. DONATH recommends (in *Chem. Zeit.*) to prepare the solution of ammonium sulphide to be made, instead of in the usual method (saturating ammonia with hydrogen sulphide), as follows:

Into a capacious tubulated retort introduce 1 part of powdered ammonium chloride, and pour upon it a solution of 2 parts of commercial crystallized sodium sulphide in 2½ parts of hot water. Then apply heat and collect the distillate in a receiver until about half of the liquid has passed over. The yellowish distillate is a concentrated solution of ammonium sulphide.

Cement for Porcelain.

ACCORDING to the *Rundschau* (Prag), freshly precipitated casein is introduced into a bottle so as to fill the latter one-fourth. It is then filled with a solution of silicate of soda, and agitated, whereupon the casein will be dissolved. The solution may then be used at once.

Emulsions of Oils.

P. VAN ASPEREN reported at the last meeting of the Netherlands Pharmaceutical Society on emulsions of oils. Regarding *Cod Liver Oil* he stated that the refined, pale oil is much easier to emulsify than the brown oil.

As most suitable method of "emulsifying" *Cod Liver Oil* he recommends the following:

Cod Liver Oil	20 parts.
Soft Soap (Pharm. Neerl.)	1 part.
Water	5 parts.

Dissolve the soft soap in the water; then thoroughly agitate the oil with the mixture.

[*Note.*—*Sapo kalinus*, or soft soap, of the Netherlands Pharmacopœia, is thus prepared:

Solution of Potassa (15 per cent of KOH)	100 parts.
Olive Oil	65 "
Water	a sufficient quantity.

Mix the solution of potassa with the olive oil, and heat on a water bath until a perfect soap has been produced. Dissolve this in 100 parts of water, and evaporate the solution, under constant stirring, until the residue weighs 100 parts.]

The same method may also be used for emulsifying *Castor Oil:*

Castor Oil	20 parts.
Soft Soap	1 part.
Oil of Peppermint	q. s.
Water	5 parts.

Proceed as under Cod Liver Oil, and flavor with oil of peppermint.

Oil of Turpentine may likewise be emulsified in the same manner:

Oil of Turpentine	50 parts.
Soft Soap	4 "
Water	40 "

—After *Pharm. Zeit.*

Hyacinth Essence.

Hyacinthin	60 Gm.
Oil of Neroli, Bigarade	10 "
Tincture of Musk	50 "
" " Benzoin	100 "
Extract of Jasmin (triple)	500 "
Alcohol, deodorized	3000 "
Orange-Flower Water (triple)	300 "

[*Note.*—Hyacinthin is a synthetic product, possessing the real odor of the hyacinth.]

Pistoia Powder.

THERE is a powder made in a convent near Pistoia, Italy, and it is used very extensively as a protective against gout. The following is said by Mr. Chastaing to be its composition:

℞ Bryonia Root, Gentian, Chamomile	āā 10 Gm.
Colchicum Root	20 "
Betony	50 "

This is made into 365 powders, one of which is taken each day of the year in a full glass of cold or hot water. —*Medical Record.*

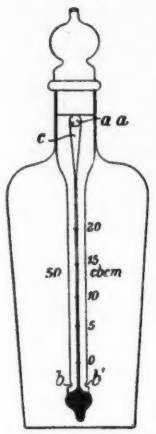
Chlorine Mixture.

A NEW mixture for the rapid and extemporaneous generation of chlorine gas has been patented by O. Stueber, of Stuttgart (Germ. Pat. 51778). This consists of chloride of lime mixed with a quantity of bisulphate of sodium or potassium sufficient to liberate all the chlorine. It may be used either as simple mixture, the addition of water alone being sufficient to liberate the gas; or it may be compressed into pieces (cubes, etc.).

IMPROVED SPECIFIC GRAVITY BOTTLE.

DR. FRITZ VOELLER describes a new specific gravity bottle in the *Zeitsch. f. angew. Chemie* (No. 13).

It is a small bottle of about 50 C.c. capacity, having an accurately ground stopper to which a thermometer is fused. The latter consists of an interior mercury tube (the thermometer proper), and an exterior hollow tube having two small orifices near the bottom, at *b* and *b'*, which permit the liquid to be tested to ascend along the mercurial column, so that the latter may indicate the true temperature. The same outer thermometer tube has a little hole above, at *a*, where the surplus liquid may run out. The neck of the flask has also a little hole exactly corresponding with the hole in the stopper when the latter is turned so as to meet it.



When the bottle is to be used it is filled with the liquid to be tested, at a temperature somewhat below 15° C., then the stopper slowly and gradually inserted, and turned so that the two orifices in the stopper and neck correspond. As the liquid expands while rising to 15° C., the surplus will exude through the orifice. The moment that 15° C. is reached the stopper is rotated so as to cover the inner hole. The outside of the bottle is then thoroughly cleaned, and the bottle then weighed. Its capacity for water at 15° C. (or at 4° C.) being previously known, the specific gravity of the liquid is easily determined.

Bleaching Sponges.

THE method of bleaching sponges, given in the National Formulary under No. 348 (Spongia Decolorata), is probably all-sufficient for every purpose. Yet it will be useful to have at one's disposal other methods, which may be used when the ingredients required for the other are not all available.

Roeser has recently published a method (in *Bulletin Commercial*, No. 9, September), which is as follows:

Wash the sponges first with warm distilled water, containing in each liter 20 drops of a 10-per-cent solution of caustic soda; then rinse them in pure distilled water (warm), so as to deprive them of everything soluble in this liquid. The temperature of the water here and subsequently should be about 104° to 110° F. [Ordinary water, if practically pure, may be used.]

Press the excess of water from the sponges, then immerse them, without squeezing, into a glass jar containing dilute bromine water. The latter is prepared by adding to each liter of warm distilled water 30 Gm. (1 ounce) of a saturated solution of bromine in water. Leave the sponges in the liquid until they are decolorized; then remove them, press them, and repeat the treatment once or twice with fresh bromine water until they are as white as is desired or possible. Next immerse them in warm water rendered slightly alkaline (with 20 drops of a 10-per-cent soda solution to each quart of water), and, lastly, wash them with pure warm water until they are odorless.

Hypodermic Injection of Morphine.—Bombelon recommends the meconate of morphine as the most suitable salt for hypodermic use. He states that it keeps well in solution and causes no pain. This has also been the experience in New York hospitals in former years. For some reason not known to us the salt has fallen into disuse.

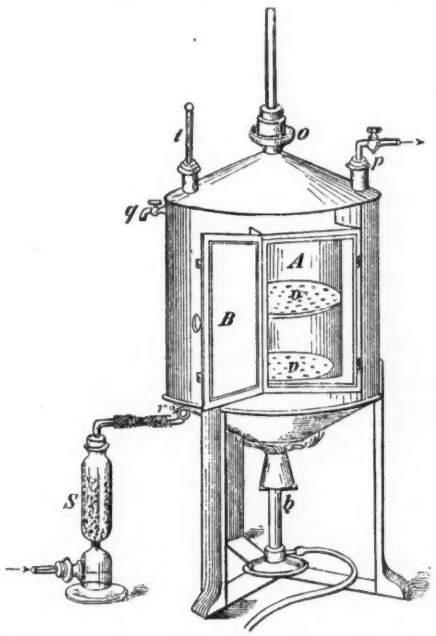
Rubber Cement.—To fasten glass letters, figures, etc., on glass (show windows) so that, even when submerged in water for several days, they will not become detached, use an india-rubber cement. The best for this purpose consists of 1 part india rubber, 3 parts of mastic, and 50 parts of chloroform. Let stand for several days at a low temperature to dissolve the cement. It must be applied very rapidly, as it becomes thick very soon.—*Sci. Amer.*

A NEW DRYING APPARATUS.

A. SIDERSKY recommends the drying apparatus here described, which works under a partial vacuum.

It consists of a cylinder of double copper walls about 12 inches high and 14 inches in diameter. Its inner bottom is flat, while the outer is made to bulge downward. At the top the outer cylinder has a conical roof, provided with the openings *p* and *t*, which communicate with the interior. B is a door which can be closed hermetically, being lined at the edges with rubber. At *r*, near the bottom, is an inlet provided with a stopcock, by means of which a current of dry air may be admitted to the interior.

When the apparatus is to be used water is poured into the opening at *o* until it begins to flow from *q*. A cork bearing a long glass tube is then inserted in *v*. This acts as a condenser. A thermometer is inserted in *t*, and *p* is connected with the air or vacuum pump. The water in the space between the two walls is now heated by means of a suitable burner, the stopcock at *q* having, of course, been previously closed. Next the vacuum pump is set going, when the vapors given out by substances placed



in the inner chamber will be rapidly drawn off, causing a speedy drying of the introduced substances. When the operation of drying is completed, the stopcock *r* is opened, and a current of air, dried by passing through the chloride of calcium tube S, drawn through the apparatus.—*Chem. Centralh.*

Succinimide of Mercury.

VOLLERT recommends this salt of mercury as the most suitable for hypodermic use, since it causes no pain whatever and produces no disagreeable local effects. It may be combined with cocaine without interfering with the effects of either constituent. If the quantity of cocaine is, however, notably exceeding that of the mercury salt—say 3 to 1—a resinous compound, produced by the reaction between the substances, is separated.

Succinimide has the composition $CH_2CO.NH.CH_2CO + H_2O$. It is usually prepared by very rapidly distilling ammonium succinate. It is a crystalline solid, very soluble in water, also in alcohol. The hydrogen of the NH group may be replaced by metals. Thus, the mercury salt is obtained when an alcoholic solution of succinimide, mixed with a few drops of ammonia, is added to an ethereal solution of mercuric chloride.

Notes upon the Preparation and Use of Ointments.

DR. L. DUNCAN BULKLEY, of New York, in a recent number of the *Therapeutic Gazette*, offers a number of practical suggestions regarding this class of remedies.

It is better not to trust to any artificial means for preserving the freshness of ointments, but to secure sweet and good material, and always to reject that which is at all old, or ointments which have been long prepared. It is important to avoid the slightest rancidity in ointments, and it is better to order ointments to be freshly compounded of the strength desired, rather than to take those officinally prepared and kept in stock.

Among cerates, which are in some respects more valuable for ointments for most skin affections than lard, we have two, *ceratum simplex*, consisting of white wax 30 parts, lard 70 parts; *ceratum cetacei*, which is composed of spermaceti 10 parts, white wax 35 parts, and olive oil 55 parts. To these should be added *unguentum cetacei*, which is very like the latter, only somewhat softer. These all have considerable body, and when spread on the skin form a protective coating, more suitable for many conditions than lard alone; but the first mentioned, or simple cerate, is far too hard for easy application in most diseases of the skin. The *glyceritum amyli*, composed of starch 10 parts and glycerin 90 parts, is a good basis for ointments when fatty substances are not well borne, or when it is desirable to remove the application frequently with water. Combined with oil of cade 25 parts, sapo viridis 15 parts, and glycerite of starch 60 parts, it makes a most valuable application in psoriasis, which can be well rubbed in at night and washed off completely in the morning.

The *oleum theobromæ* is ordinarily but little used in compounding ointments. It is particularly useful when added, in about a quarter part, to ointments for use on the hairy scalp, to give them a low melting point and to aid in forming a protective coating over the skin; when employed in too large a proportion it will prove irritating to many skins.

Under the head of "ointments" we find but two preparations in the Pharmacopœia—the *unguentum simplex*, composed of lard 80 parts and yellow wax 20 parts, and the *unguentum aquæ rosæ*, of expressed almond oil 50 parts, spermaceti 10, white wax 10, and rose water 30 parts. The *unguentum simplex* is a good combination—much better for general use than simple lard; but, on the other hand, it is often found to be too hard, and ointments made with it will often be difficult of application, and when made up for some time with other ingredients will become too stiff for ready use; as ordinarily kept in drug stores it has often been found quite rancid.

The best ointment of all, when fresh and properly made, is the *unguentum aquæ rosæ*, the cold cream of the Pharmacopœia. But some judgment and skill are necessary in its preparation, for unless very perfectly compounded, with prolonged rubbing together of the ingredients, the ointment will not be perfect; in summer, also, it will require rather a larger proportion of the spermaceti and white wax in order to have the proper consistence for a perfect application. Very frequently, when the skin tends to be too dry, a portion of the water may be replaced by glycerin. Occasionally the odor of the rose water is not agreeable to the patient, and simple distilled water may be used in its place. The water held in this ointment is undoubtedly an important element in its remarkable effects on the skin, for the *ceratum cetacei* and *unguentum cetacei* have quite a similar composition, but are by no means agreeable to most skins.

When the various products of petroleum, known in the Pharmacopœia by the general name of *petrolatum*, were introduced, it was thought they would furnish the best possible bases for ointments, and that they would rapidly supersede all other excipients; in Dr. Bulkley's opinion they will never supplant those already mentioned and others of recognized value. They are by no means always agreeable and non-irritating to the skin; indeed, many individuals are found who cannot bear them on the skin at all. Most of them have not body enough to form good ointments, although for simple inunction, as a lubricant, or for the application of carbolic acid to the skin as an antipruritic, vaseline serves the purpose very well.

Recently, when lanolin, and subsequently agnine, were presented to the profession, it was expected that this substance would replace other ingredients as an excipient for ointments. But again we have been disappointed, and lanolin forms but a very small portion of the base of ointments used by those especially occupied with diseases of the skin. It is too sticky and not easy of application, and, moreover, it will often prove irritating to a delicate skin. While it was thought to afford a means for the more ready absorption of medicaments, more experience has shown it to be questionable if this is the case. Indeed, in some experiments by Brooke it was shown that the substances incorporated with lanolin were the slowest in entering the system. Lanolin is, however, useful as an addition to certain ointments, in the proportion of about 20 per cent, to give an adhesive quality to them, thus securing a firmer and more adherent coating for the affected parts.

Of some forty officinal ointments, very few can be prescribed, as they are, with advantage in diseases of the skin. Thus the carbolic ointment is made of a strength of 10 per cent, which is far too strong for most skins; whereas the tannin ointment of the same strength is too weak to be of real service. The belladonna ointment is also of the same strength, and is capable, if used at all freely, of producing serious constitutional effects. Also, the officinal ointment of chrysarobin should be diluted for most skins.

Eight ointments are officinal containing preparations of mercury. Of these the blue ointment, containing 50 per cent of metallic mercury, is well known and of great value; but for inunction on most skins it requires dilution by one-half, in order not to excite too much local irritation. White precipitate ointment has commonly to be diluted two or three times, even in psoriasis and seborrhœic eczema. The red iodide ointment is of fair strength, but to be effective in lupus, or where its corrosive power is required, it should be employed much stronger. Citrine ointment, one of the best known of the mercurial applications, is far too strong to be freely used. When diluted two to four times it often serves a good purpose in reducing infiltrations of the skin. The yellow and the red oxide of mercury require to be very greatly diluted for use about the eyes.

The single ointment of iodine is a good preparation, containing a trifle of iodide of potassium. A prescription which is of great service in reducing glandular enlargements in syphilis is a mixture of iodine ointment with the ordinary mercurial ointment in equal parts. When well rubbed together an ointment of the green iodide of mercury is made, which acts much more quickly than either of the ointments alone. For delicate skins it may require some dilution, but generally it is well borne. It is useful as a parasiticide in ringworm and favus of the scalp.

The *unguentum picis liquidæ* is an excellent remedy, composed of equal parts of tar and suet; but it is far too strong for general use, undiluted. When combined with oxide of zinc and rose ointment it forms one of the most perfect applications known for a large share of cases of subacute eczema, both in children and in adults:

℞ Ung. Picis..... ℥ ij.
Ung. Zinci Oxidi..... ℥ ss.
Ung. Aquæ Rosæ..... ℥ iv.
M.

The ointments of the carbonate of lead and iodide of lead, each 10 per cent, are also good combinations.

The latter is certainly an excellent means for causing absorption of enlarged strumous glands. The stramonium ointment, containing 10 per cent of the extract of stramonium, is likewise a good application, and forms a most valuable base for combination with acetate of lead and opium in the treatment of hæmorrhoids.

There are four ointments containing sulphur, only one of which, the *unguentum sulphuris*, containing 30 per cent of sublimed sulphur, is well known or much used. This is also too strong for direct application to most skins; diluted two or three times with a little storax, and perhaps a little tar ointment, it forms an excellent treatment for scabies, although the more agreeable appli-

cations of naphthol and resorcin have largely taken its place in dermatological practice.

The oxide of zinc ointment of our Pharmacopœia is a fairly good preparation. It is made with benzoinated lard, which is not agreeable to all skins; it is sometimes rancid and irritating in cases in which a freshly prepared zinc ointment in cold cream is grateful and healing.

Diachylon ointment, when freshly and properly made, is one of the most valuable means of local therapy known for many diseases of the skin. The preparation made according to the original formula of Hebra, and given in the German Pharmacopœia, is a soft, buttery ointment, easily spread, and of a delightfully soothing character to most skins, and is decidedly superior to the ointment made according to the U. S. Pharmacopœia.

A few words may now be added in regard to the actual preparation or compounding of ointments, a feature which continually requires the attention of the physician if he would have success in the treatment of skin diseases. It is desirable for the physician to frequently inspect the ointments or other preparations which are being employed, and to test them by smelling, feeling, rubbing on the skin, etc.

More harm is commonly done by too strong ointments than is usually supposed. The skin is a sensitive and irritable organ, and more often wants to be treated considerately and soothed into good action than it does to be stimulated and irritated. It is well to begin with a mild preparation, increasing the strength as circumstances seem to demand.

It is also well to remember that the average patient, who has not heretofore been instructed, or who has not had special experience, knows nothing in regard to the best mode of application of an ointment, and if the highest degree of success is to attend the use of any particular remedy it must be only by its proper employment. Careful directions should, therefore, always be given to patients exactly how to apply ointments.

Where it is desired to keep a part continually under the effect of an ointment, it should be soaked in it, if it were possible, as completely as though the part were immersed in a very large mass of the same; but as this is not possible, we have recourse to lint, and the ointment, which should always have considerable body, is spread to a very thick layer on the woolly side of the lint, and then firmly bound on the part.

An excellent illustration of the necessity for minute directions in regard to all these data is found in connection with eczema of the scrotum. When treated carelessly, or when the patient merely smears on an ointment, the disease will prove most distressing and rebellious; but when, on the other hand, very minute directions are given in regard to the sudden and brief application of hot water once daily, at bedtime, and when the part is quickly dried and enclosed in a piece of lint spread with the tar and zinc ointment previously alluded to, and covered by a suspensory bandage, the patient has complete relief, and with proper accompanying treatment can surely be cured, and that with reasonable speed.

The demand in dermatology is not so much for new drugs, applications, or methods of treatment, as it is for the diffused knowledge of what is already known to be of service, and the faithful carrying out of methods which experience and observation have proved to be useful.

Cinchona Cultivation in Bengal.—The statistics of cinchona cultivation in Bengal for the year 1890–91 have recently been published. During that period the total number of plants, cuttings, and seedlings in the Government plantations amounted to 4,749,861, divided as follows: Plants in permanent plantation, 4,515,861; stock plants for propagation, 4,000; and seedlings, 230,000. The quantity of bark in store at the beginning of the year was 426,256 pounds, while the outturn of bark of the year ended April last was 293,972 pounds, making a total of 720,247 pounds. From the latter amount have been issued, for manufacture of cinchona febrifuge and sulphate of quinine, 250,330 pounds, leaving a balance in stock at the end of the year of 460,917 pounds.

Constituents of Oil of Rose.

ULRICH ECKART has made an exhaustive examination of genuine oil of rose, both of Turkish and of German origin, and has found them to contain the following constituents:

1. Ethyl alcohol, about 5 per cent.

2. Elæopten, the odorous liquid portion. This turned out to be a true chemical individual, having the composition $C_{10}H_{18}O$, to which the name *rhodinol* was applied. It belongs to the class of unsaturated primary alcohols. It was found to be a very sensitive substance. After separating it (in conjunction with the ethyl alcohol present) by cooling from the stearopten, it appears as a greenish liquid possessing a mild, agreeable odor, somewhat resembling that of mint, and having a specific gravity of 0.891 (German) or 0.8804–0.8813 at 15° C. If more than about 30 Gm. are subjected to distillation at one time, the liquid decomposes and leaves up to 25 per cent of a non-volatile residue. The very act of separating the first fraction, viz., the ethyl alcohol, from the elæopten, causes some of the latter to decompose. Hence the alcohol must be determined in one portion, and the true elæopten in another. The latter is, however, completely volatilized if cautiously distilled at a very low pressure.

3. The stearopten. This melts at 33.5° to 36.5° C., and consists of two different bodies (stearoptens).—After *Arch. d. Pharm.*

Indian Opium in Medicine.

AT the recent British Pharmaceutical Conference Mr. E. M. Holmes read a paper on "The Opium used in Medicine," in which it is stated that Indian opium is not used in England. In one recent year only two cases of Malwa opium appeared to have been imported into this country, and it was unknown to retail chemists. He thought that there was no reason why India should not take the place of Turkey in supplying Great Britain and her colonies with the drug. It was true that the Indian opium differed materially from Turkey opium, as, from the process of manufacture at present employed, it contained 30 per cent of water, was apt to ferment, and contained less morphia than Turkey opium. But he saw no reason why, if the necessity arose, some improvement could not be effected in the process of manufacture. The poppy grown in the higher altitudes in India yielded opium containing 50 per cent more morphia than that gathered in the plains. He then proceeded to adduce reasons for anticipating that it may be beneficial for the Indian Government to look to Great Britain as an outlet for the opium produce, and these are: The Chinese are now cultivating the poppy to a large extent, with the result that the opium exports of India are on the decrease; as the interior of Africa is opened up a large supply of the drug will be required by the inhabitants of that country; and should Turkey become the seat of a European war our supplies from that country will fail, and then it would be that India might step in. He also referred to the manufacture of opium in Australia, and gave it as his opinion that opium could be manufactured in India, under proper English supervision, which would compete with the Turkey variety. Specimens of Indian opium were exhibited.—After *Pharm. Journ.*

Hypnal.

HYPNAL, or monochloral-antipyrine, is prepared, according to Demandre, as follows:

To a solution of 47 Gm. of chloral in 50 C.c. of distilled water add a solution of 53 Gm. of antipyrine in 50 C.c. of water, and transfer the mixture into a funnel provided with a stopcock (separating funnel). When the mixture has separated into two layers, an upper, aqueous one and a lower, oily one, draw off the two layers separately. After about twenty-four hours the oily layer will have been converted, almost entirely, into a mass of transparent, rhombic prisms, and a few small crystals will be found in the aqueous portion. The mother liquids having been poured off in both cases, the crystals are collected together and dried, first between blotting paper and afterwards over sulphuric acid.—*Petit Mon. de la Pharm.*

History and Nature of Alkaloids and Vegetable Bases.

THE following is a more or less free translation of part of the introduction of a very interesting and valuable work on alkaloids by Dr. Pictet, which has just appeared in German translation.* The work embodies the latest views entertained regarding their constitution, and groups the several bases together so as to show their relationship.

Of the various compounds belonging to the domain of organic chemistry, the class of vegetable bases designated as *alkaloids* probably attracts the deepest interest and attention of the chemists. They owe this interest to the peculiar chemical or physiological properties possessed by them. For many years, however, all attempts to discover the internal structure of their molecule, and to discover their relationship with other compounds of known constitution, were unsuccessful. While a host of other bodies of an equally complicated nature had been studied with great assiduity and successfully built up by synthesis, the alkaloids appeared to baffle all such attempts. It is only about fifteen years since the veil resting upon their constitution began to lift. The discovery and study of the pyridine and chinoline bases in coal tar, the direct connection of which with the vegetable bases was soon recognized, largely contributed towards giving a solid foundation to the researches. A number of the foremost chemists devoted themselves entirely to this study, with such success that we are to-day able to have definite conceptions regarding the constitution of most of the important alkaloids. The main step was made through the synthesis of two alkaloids. One of these is *coniine*. In the course of a series of important investigations on this base, Ladenburg succeeded in building it up from the elements. This discovery revolutionized this domain in the same manner as the whole field of organic chemistry had been affected by Woehler's synthesis of urea. The other alkaloid is *trigonelline*. This was discovered by Jahns, in 1885, in the seeds of *Trigonella Fœnum Græcum* (fenugreek), and was recognized by him to be identical with the methyl-betain of nicotic acid, which had already been prepared artificially by Hantzsch.

Although the investigations of other bases have not yet been crowned by such remarkable success, yet science has been enriched by a large number of valuable facts and observations. . . .

The history of the alkaloids begins with our century. In 1803 Derosne (at Paris) obtained from opium a crystalline substance which he called "salt of opium," and which must have been a mixture of morphine and narcotine. He ascribed the basic properties of this substance to an impurity believed to be alkali derived from that used in the preparation. In 1804 Séguin likewise had morphine in his hands without recognizing its character. It was Sertürner (a German apothecary) who has the merit of having discovered the first vegetable base. The latter announced in 1806 that he had extracted from opium an acid—*meconic acid*—and a crystalline substance of a basic nature which unites with acids to form salts, and exists in opium probably as meconate. Sertürner's discovery, however, remained unnoticed. At that time it was held that plants could produce only acids or substances of a neutral reaction. Sertürner had to repeat his announcement in a second paper, which appeared in 1817 under the title "Ueber das Morphium, eine neue salzfähige Grundlage, und die Mekonsäure als Hauptbestandtheile des Opiums" [On morphine, a new salifiable base, and on meconic acid, as chief constituents of opium]. In this new paper Sertürner calls morphine a vegetable alkali and brings it in relation to ammonia.

From this time on the search after alkaloids was prosecuted with increasing energy, so that many are known at the present time.

The complex formulas of the alkaloids first discovered gave but poor encouragement to theoretical speculations regarding their constitution; nor was the relationship among them, as members of a group, recognized, owing to the dissimilarity of their reactions.

Berzelius explained their alkaline character by assuming that they contained ammonia in combination with an indifferent group, such as a hydrocarbon or an organic oxide.

Others held that their nitrogen was combined with oxygen, or that it was present in form of a compound resembling cyanogen.

The important publications of Wurtz and Hofmann (1848), which led to the discovery of a large number of important artificial organic bases, at the same time threw much light upon the general constitution of the alkaloids. It was recognized that the natural as well as the artificial bases consist of the ammonia group with partial or entire substitution of the hydrogen. On applying to them the reactions, which Hofmann has discovered, for distinguishing the four classes of substituted ammonias, it was soon discovered that all of them are tertiary amines.

Since then the researches on alkaloids have been greatly extended, and have led to the establishment of the following three facts:

1. The bases which are found in the same plants possess, in general, not only analogous empirical formulas, but also a similar chemical constitution. Many alkaloids found in one and the same plant have already been successfully converted one into the other. Thus, harmaline has been converted into harmine, morphine into codeine, narcotine into hydrocotarnine, hyoscyamine into atropine, morphine into pseudo-morphine, etc.

Other alkaloids, such as those from opium, or conium, or belladonna, or cinchona, or strychnos species, were found to yield, by simple reactions, the same products of decomposition; hence those belonging to the several groups must be supposed to be very closely related chemically.

2. The molecule of a large number of alkaloids may, by suitable agents, be split into two atom groups entirely differing in nature. One of these groups is always a base and contains all the nitrogen of the original alkaloid. The other is usually an acid, sometimes also a neutral body or a kind of sugar. In this way most of the oxygenated alkaloids may be split up, such as piperine, cocaine, solanine, achilleine, erythrophleine, aconitine, veratrine, atropine, hyoscyamine, narcotine, hydrastine.

In almost every one of these cases the constitution of *one* of the two components, viz., the acid, has been made out. In many cases it has been possible to identify this with an acid already well known; and in almost all the others the rational formula could be deduced from its reactions.

On the other hand, the basic product of decomposition has so far mostly remained ununderstood. In some cases (piperine, atropine, cocaine, papaverine, narcotine, hydrastine) good results have been obtained, but in others no satisfactory conclusion has so far been arrived at.

3. Viewed from a chemical standpoint, the alkaloids constitute a sharply defined class, inasmuch as they are all derived from one and the same base, viz., pyridine.

Anderson had obtained (in 1846) from the product of the dry distillation of bones (Dippel's animal oil) a certain series of homologous basic substances, the first member of which was C_5H_5N, and to which he gave the name *pyridine*.

Some years previously Runge had discovered another basic substance, *chinoline*, in coal tar. The relation of the latter to Anderson's pyridine was soon recognized. Chinoline is related to pyridine in the same manner as naphthalin is to benzol.

In 1885 Hoogewerff and Van Dorp discovered in coal tar another base, isomeric with chinoline, which was designated as *isochinoline*. This was found to be related to pyridine in the same manner as chinoline.

The further study of alkaloids showed that these vegetable bases were closely connected with the basic substances obtainable from Dippel's animal oil and coal tar, viz., pyridine, chinoline, and isochinoline.

Thus, Gerhardt obtained chinoline (in 1842) by heating strychnine, cinchonine, or quinine with caustic lime. Others obtained the same base subsequently by treating morphine, berberine, and brucine in a similar manner.

On the other hand, Huber (in 1864), Willm and Caventon (in 1873), Weidel (in 1873), Gerichten, Bernheimer, Goldschmidt, and Freund (in more recent time) succeeded in obtaining pyridine from acids (by heating with

* Die Pflanzenalkaloide und ihre chemische Konstitution. Von Dr. Aimé Pictet, Privatdozent an d. Universität Genf. In deutscher Bearbeitung von Dr. Richard Wolffenstein. 8vo. Berlin (Springer), 1891.

lime or simply heating) which themselves had been derived by oxidation from nicotine, cinchonine, quinine, berberine, sparteine, papaverine, narcotine, or their derivatives.

Piperidine, a decomposition product of piperine, was recognized in the same manner as a reduced pyridine. Pyridine and its homologous bases were also furnished by nicotine, coniine, brucine, strychnine, morphine, various cinchona alkaloids, certain derivatives of narcotine, and veratrine, when heated with zinc dust or soda lime. Finally, tropidine, a decomposition product of atropine, has been converted, by the action of bromine, into a dibrom-derivative of pyridine.

In this way it was recognized that many, and among them the most important, alkaloids yielded pyridine as a final product, and that they, for this reason, belong to the aromatic series or the benzol derivatives.

Some vegetable bases, however, are not derivatives of pyridine; for instance, betaine, muscarine, choline, and sinapine. Theine and theobromine likewise do not belong to the pyridine series. Their constitution is now perfectly understood: they belong to the derivatives of uric acid.

Finally, there are a number of vegetable bases, of which it is not known whether they belong to the pyridine series or not. For this reason it is not correct to say that all vegetable bases are derivatives of pyridine. It is preferable to adopt the proposal of Koenigs to make a distinction between *vegetable bases* and *alkaloids*, using the latter term for the large number of compounds belonging to the pyridine series. If this is done some substances heretofore classed among the alkaloids (such as theine, sinapine) must be excluded from this class.

While the study of the natural vegetable bases and alkaloids was carried on with energy, the nature of the pyridine bases occurring in animal oil and in coal tar was likewise made the object of various researches. Many new derivatives were discovered, their constitution and relationship to others cleared up, and many of them prepared by synthesis. Thus there gradually was found or formed a large number of compounds, derived from the pyridine nucleus, forming a class by itself alongside of the two large classes of bodies belonging respectively to the fatty [or "marsh gas"] and the aromatic [or "benzol"] series.

Among these synthetically prepared bodies a considerable number were found to be identical with certain products obtained by the decomposition of natural vegetable alkaloids. Others, again, showed remarkable similarities, either in their properties or in their reactions, with the natural bases obtained from plants.

Hence it is no longer possible to separate these two kinds of bases, the natural and the artificial. It is best to comprise them both under the name *alkaloids*. If it is desired, they may still be distinguished as *natural* or *artificial*, although this distinction is itself an artificial one and will eventually have to be abandoned. Two natural alkaloids have already been obtained artificially; others will undoubtedly be so obtained in a short time, and their number will constantly increase, so that we shall eventually know of each alkaloid which place it has to occupy in the system of the pyridine derivatives. . . .

[The following is taken from the introduction to the second part of the same work:]

The properties which induce us to comprise the vegetable alkaloids in *one* class are of a purely chemical nature; but this classification holds also good [in most cases] botanically, since the bases found in one and the same or allied plants are closely related chemically.

It is rare that the same alkaloid occurs in more than one family or order of plants. Only berberine and buxine have, so far, been found in various plants not related at all botanically.

Many orders of plants yield no alkaloids at all; for instance, those of the Compositæ and Labiatæ. [As to Compositæ, this statement is perhaps no longer true.—*Ed. Am. Drugg.*] Only colchicine and the veratrum bases are found among monocotyledonous plants. All other alkaloids occur only in dicotyledons.

The natural alkaloids were formerly divided into those which are liquid, may be distilled unchanged, and contain no oxygen, viz., coniine, nicotine, and sparteine; and those which contain oxygen, are usually crystallizable, and are decomposed by distillation.

This division, however, is not correct, since there are some (as yet little known) alkaloids, such as conessine, aribine, hymenodictine, which are solid at ordinary temperature and contain no oxygen; others again—as, for instance, the bases existing in granate root bark—are liquid and contain oxygen.

Some oxygenated alkaloids may be sublimed without decomposition, viz., atropine, hyoscyamine, cinchonine, harmine, rhœadine, and cytisine.

The natural alkaloids have an alkaline reaction upon litmus paper and possess a more or less bitter taste. They are mostly insoluble or difficultly soluble in water, more or less soluble in ether, easily soluble in alcohol. Nearly all (excepting only a few of the opium bases) are insoluble in alkalies.

Most of them turn the ray of polarized light. Optically inactive are: piperine, atropine, berberine, sanguinarine, delphinine, paricine, and three opium bases: narceine, cryptopine, and hydrocotarnine.

Nearly all active alkaloids turn the polarized ray to the left. Only coniine, narcotine, pilocarpine, quebrachine, and some cinchona bases turn it to the right.

In conformity with their basic properties, alkaloids are rarely found free in nature; they generally occur as salts, combined with various acids, such as malic, citric, lactic, tannic, etc. Some alkaloids, however, are combined with peculiar organic acids not otherwise or but rarely elsewhere occurring: thus, for instance, the alkaloids of opium [or some of them, at least] with meconic acid; those of cinchona with kinic acid; those of aconite with aconitic acid; those of veratrum with veratric acid; jervine, chelidonine, and sanguinarine with chelidonic acid.

Venus' Fly Trap.

A CURIOUS account of the "Venus' fly trap" was laid before the Biological Section of the American Association for the Advancement of Science, at its recent meeting, by Professor J. M. Macfarlane, of Edinburgh, who also gave an illustrated lecture on the hybridization of plants. Concerning the "fly trap," he proved by specimens at hand that two touches were necessary to make the leaf close up, but that it made no difference whether one of the six sensitive hairs was twice touched, or two of them each touched but once. The protoplasm of the leaf cells retained sharp recollection of the first touch for fifteen seconds, which was weakened during the next fifteen, and was wholly gone in about a minute. This exactly agrees with the "latent period" of muscular contraction in animals, though longer as to period. He showed that every part of the leaf blade is sensitive, closing after two snips, and that, if the first snip is very strong, closure may occur at the second, even after the lapse of two minutes. A strong jet of water will produce sudden closure. The action of chemical and electrical stimuli on these leaf cells is identical in behavior with that on the nerve muscle cells of the lower animals. This discussion was made particularly interesting by the presence of a beautiful array of plants from the public botanical garden, loaned for the purpose of demonstration.

Plaster of Paris Formulas.

1. *To Make Plaster Set Hard.*—Mix best plaster of Paris with about 10 per cent—more or less, according to effect ascertained by preliminary experiment—of very finely powdered marble (calcium carbonate). Or add to it about 6 per cent of powdered alum, or about the same amount of ammonium chloride, before mixing it with water.

2. *To Make Plaster Set Slower.*—Mix it with 2 to 4 per cent of powdered althæa root before adding the water. This not only retards the hardening of the plaster, but also enables it to be cut, filed, sawed, and turned.

An addition of 8 per cent of althæa powder retards the complete setting of the plaster for about one hour, so that the mass can be used for any purpose where it is to remain plastic during at least a portion of that time.

Detection of Citric Acid in Wine.

DR. A. KLINGER and DR. A. BUJARD have found that the method hitherto employed for detecting citric acid in wine is liable to lead to error, since it does not guard against mistaking malic for citric acid. They propose, instead of it, the following safer method:

A considerable quantity (say 250 C.c.) of the wine [or other beverage] suspected to contain citric acid is evaporated to about one-third of its volume, then mixed with potassium acetate, strongly acidulated with acetic acid, and mixed with twice its volume of strong alcohol, so as to cause the separation of the tartaric acid (as potassium bitartrate). After about twenty-four hours the mixture is filtered and the residue washed with a few cubic centimeters of dilute alcohol, in order to redissolve any calcium citrate which may have been separated at the same time. The filtrate is now precipitated with subacetate of lead solution, the precipitate washed with dilute alcohol and then decomposed in the usual manner with hydrogen sulphide.

The filtrate separated from the lead sulphide is evaporated to a rather concentrated solution, mixed with very dilute milk of lime to alkaline reaction, and after a few hours filtered, the filter retaining any phosphoric acid and still remaining traces of tartaric acid as calcium salts. The filtrate is acidulated with a little acetic acid, then evaporated to dryness, and the residue extracted with hot water mixed with a little hydrochloric acid. Some chloride of ammonium is then added, the liquid faintly supersaturated with ammonia and boiled for a considerable time. If a precipitate is now produced, it can only be calcium citrate, since calcium malate is not precipitated by boiling in presence of ammonium chloride. —*Zeitsch. f. angew. Chem.*

Identity Reaction of Phenacetin.

W. AUTENRIETH and O. HINSBERG have recently published a paper on phenacetin and certain of its derivatives in the *Archiv d. Pharmacie*, volume ccxxix., page 456, in which they first communicate a new identity reaction of the substance, and afterwards give the results of their investigations into the nature of the product of this reaction and into its constitution.

Identity Reaction for Phenacetin.—Upon 1 part of finely powdered phenacetin pour 2 parts of nitric acid containing 10 to 12 per cent of HNO_3 [specific gravity about 1.075], and heat for a short time to boiling. The liquid will assume a yellow to orange color, and the phenacetin, which had at first remained colorless, will at the same time (so far as it is not dissolved) be converted into a nitro compound of an intensely yellow color. When the liquid cools, a further crop of needles of the yellow (or brownish-red) compound crystallizes out.

Antifebrin and antipyrine remain unaffected when treated in this manner.

If concentrated nitric acid is used, however, antifebrin is colored yellowish-red and antipyrine yields a red solution.

The melting point of the characteristic yellow derivative of phenacetin, which was subsequently recognized as *mononitrophenacetin*, or $C_6H_3.OC_2H_5(4).NO_2(2).NHCOCH_3(1)$, is at about 103° C.

Preparation of Hydrogen Peroxide.

A. BOURGOUGNON states, in the *Jour. Amer. Chem. Soc.*, that he has made hydrogen peroxide, as long ago as 1878, on a manufacturing scale by the following process:

Barium dioxide is first hydrated, being left for several hours in contact with water in an earthen vessel, and repeatedly stirred until it has been converted into a homogeneous, white milk. It is then gradually added to hydrofluoric acid, kept constantly cool, the barium hydrate being thus converted into barium fluoride. After the precipitate has been deposited, the supernatant but still acid liquid is carefully neutralized with barium hydrate (baryta), rapidly filtered, and then slightly supersaturated with sulphuric acid to separate the remainder of the barium as sulphate. When this has settled, the solution of hydrogen peroxide is drawn off clear.

Preparation of Picric Acid.

CONSIDERABLE improvements have been made in recent times in the manufacture of picric acid, the necessity of which was more particularly recognized when this substance had to be prepared in very large quantities for the modern explosives.

Among the most recent processes, embracing former improvements and adding new ones, is that of E. de Lom de Berg, of Brussels (Germ. Pat. 51603), which is as follows:

Crude phenol, that is, the distillate from coal tar, which contains mostly phenol, is added to a quantity of sulphuric acid capable of converting the whole of the phenol into phenol-sulphonic acid. The oily mixture is then poured into water, which dissolves the phenol-sulphonic acid, while the other compounds separate in the form of oil and are simply decanted off. The acid liquid is now treated with a quantity of nitric acid (or a mixture of a nitrate and sulphuric acid) sufficient to convert the phenol into trinitrophenol. During this operation any cresol which may still be present and have escaped separation is not oxidized by the nitric acid. The whole is now evaporated to a syrupy consistence, the syrup mixed with a little sulphuric acid to convert any cresol present into cresol-sulphonic acid. The mixture is then poured into water, whereby the cresol compound, which is easily soluble, is separated from the picric acid, the latter being difficultly soluble in water. The latter is then recrystallized from hot water.

Linamarin.

A. JORISSEN and E. HAIRS, of Leyde, have discovered (*Journ. Pharm. d'Anvers*) a new glucoside in flax (*Linum usitatissimum*), not in the seeds, but in the fully developed plant or in the plantlets a few days old. The new glucoside was named linamarin. It is different from amygdalin and laurocerasin, but has similar properties. It is the source of the hydrocyanic acid which is produced when the flax plant (and various other plants) are distilled with water.

Estimation of Chlorine in Presence of Bromine.

A WELL-KNOWN method of estimating chlorine and bromine at the same time, is to precipitate the mixture of the halogens as silver salts and to weigh these; then to convert the mixture into silver chloride by heating it in a current of chlorine gas. On weighing again, the amount of bromine expelled is easily calculated.

Ed. Nihoul has recently found that dry hydrochloric acid gas may be used in this method instead of chlorine. The silver salt (about 0.1 to 0.4 Gm.) is fused in a tube of hard glass and the gas passed for an hour.—After *Zeitschr. f. angew. Chem.*

The Manufacture of artificial Coffee Beans has, it seems, reached a stage of such importance in the United States as to compel the attention of the revenue officers. This is no new movement, indeed. It is now more than thirty years since the late Dr. Lindley, the botanist, presented to the director of Kew Gardens, London, a selection of carefully moulded artificial beans intended for mixing with the genuine article. They were made of finely powdered chicory and were an excellent imitation. The ordinary American artificial bean is, however, composed of rye flour, glucose, and water, and is prepared to resemble in size and color a fairly good sample of roasted coffee bean. When mixed with the genuine beans these imitations acquire the aroma of coffee. It has been computed that twenty per cent of the beans sold in the United States are artificial. The spurious beans can be made at a cost of $30 per 1,000 pounds, which, mixed with fifty pounds of pure coffee, finds a ready sale. Coffee substitutes are also sold openly like butter substitutes—one firm making 10,000 pounds a week. The wholesale vender thus escapes the penalty of violating the adulteration laws, but the retailers who buy the substitute know what to do with it. In Germany an imperial decree has forbidden the sale of the machines for making the false berry. Until the prohibition they were largely advertised.

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EDITORIAL.

French Brandy.

STATISTICAL reports (which we give after *Pharm. Zeit.*, No. 72) show that, during the year 1890, there were 3,576 distillers in France, who turned out 2,214,527 hectoliters (= 58,482,914 gallons) of alcohol. [One hectoliter, or hl., is 26.42 gallons.] Among the distillers there were 416 who made more than one-half of the above-mentioned quantity of alcohol, viz., 1,483,555 hl., out of beets and molasses. There were 1,017 distillers who made 38,799 hl. alcohol out of wine, and 1,037 who made 34,374 hl. from wine lees. Corn and potatoes yielded 648,255 hl., and other substances (fruit, etc.) 12,544 hl.

These figures in themselves show that the celebrated French cognacs or brandies owe their origin almost to anything rather than wine. The amount of 38,799 hl. of wine alcohol, which is produced by 1,017 distillers, is a ridiculously small amount, compared with the quantity of "cognac" annually consumed in France and exported, which amounts to between 800,000 and 1,000,000 hl. By far the largest amount of this is made from alcohol (high wines) derived from beets. The so-called "genuine cognac" sold in France usually contains perhaps less than 10 per cent of the true article.

Absolutely pure genuine cognac (fine champagne) costs up to 80 francs per liter. The ordinary medium grades of cognac contain not a trace of distillate from wine.

Syrupus or Sirupus?

THE last German Pharmacopœia changed the spelling of the word *syrupus* to *sirupus*, thus putting an official stamp upon the latter spelling, which had been recommended or used previously by various writers or authorities, though not followed by the majority.

Some critics found fault with the change, as they considered the word to be of Greek origin, or at least did not deem its alleged derivation from the Arabic to be sufficiently authenticated. Others—for instance, Prof. Ed. Schaer, of Zurich (in *Pharm. Centralhalle*, Sept. 17th)—defend the spelling *sirupus*. It is maintained, and quite correctly, that—assuming the word to be of Arabic origin, viz., from *sharâb*—the first vowel of this word, which, when written in Arabic, is an *a*, is slurred, so as to sound more like an *e* or *i*. Now, there can be no doubt whatever that the word is from the Arabic *sharâb*, which means "drink," and also more particularly *wine*. When it was desired to express the idea of a *sweet* or *sugared* drink, the Arabs combined the word with others expressing this property. In medical works translated from the Arabic during the middle ages, the word *sharâb* was taken over under the forms *serapion* (Greek), serapium (Latin), sciruppus, siruppus, syruppus, syrupus, etc. The forms in which the word appears in the various modern languages into which it has passed—xarope, Spanish; xarope, Portuguese; sciroppo or siroppo, Italian; sirop, French; siropu, Roumanian; siroop, Dutch; sirop, Russian, etc.—show, nearly all of them, that the first vowel is and was a simple *i*. Even in modern Greek, where the word is spelled *syrâpi*, the *y* is pronounced like *i*. It is therefore argued (by Prof. Schaer and others) that *sirupus* is the preferable spelling. We agree with him in this, but believe that the spelling "syrup" has become too customary in English to be easily displaced

The Richardson Attack.

EVERYBODY who reads the American papers will have seen the sensational articles which, under such headings as "Trade Swindles," "Is it a Fraud?" "Fooling the Public," or such like, have appeared so largely as editorial matter in many leading dailies. The writers referred to assume the position that if a customer asks for a particular medicine, the druggist has no right to recommend any other. Why not? The druggist is morally and legally competent to pronounce, to the best of his knowledge and belief, as to the properties and quality of his wares. It is not his province to decry, but he is free to state his opinion that one preparation is better fitted than another to fulfil a specified purpose. He is as well qualified to do this as is a tradesman of any other class. If, for instance, a person wishes to purchase a pair of good, serviceable walking boots, and asks for a certain make of which the vender does not approve, knowing that he has those which will serve his customer better, he has a perfect right to apprise him of this fact, and we question whether the salesman would not be morally culpable if he withheld this information. It is precisely so with the druggist. His education and training as an expert should be at the disposal of his patrons, and to order the closing of his mouth, so that a third party may profit by his silence, is utterly absurd.—*Canadian Pharm. Jour.*

Illinois State Board of Pharmacy.—The following named persons were declared Licentiates in Pharmacy at the examination held in Chicago, August 18th and 19th, 1891:

Robert S. Armstrong, E. S. Bernard, Chas. Brunstrom, E. M. Brickey, John A. Butt, T. H. Dewitz, John M. Eaton, A. F. Kiessling, S. F. Luckenbach, O. T. Niethammer, C. B. Olds, Wm. Perlau, R. F. Roche, Jas. S. Wead, F. S. Wilson, of Chicago; Harry C. Loudenbeck, Marengo; and Geo. A. Woolsey, Rockford.

The following were declared Assistant Pharmacists:

Fred. Burnitt, H. M. Flint, Wm. D. Harris, H. B. Kemp, Julius Knaak, Wm. Von Lauken, O. V. Lawson, Alfred Mesnager, C. A. Schlytern, D. E. Shane, E. T. Walker, H. W. Wightman, Fred. Wolff, of Chicago; Geo. E. Long and Jas. M. Phalen, Harvard.

The New Russian Pharmacopœia (Ed. IV., 1891) has recently been issued. Compared with the preceding, it contains a smaller number of articles, 318 having been discarded, while only 100 new ones have been added. Among these we find Abstracta, Cascara Sagrada (Cortex Rhamni Purshianæ), etc. The total number of articles is 808.

Lilacin as a Mask for the Odor of Iodoform.—Lilacin, the new perfume, which is really a definite chemical substance—terpineol—existing in various essential oils, and which possesses the odor of lilacs in a pronounced degree is said to mask the odor of iodoform better than any other substance.—After *Therap. Monatsh.*

NEWS AND NOTES.

MICHIGAN.

THE well-known Woodward avenue drug firm of WIESINGER & FLUEGEL has dissolved. The business will be conducted at the old stand by Mr. Fluegel, and Mr. Wiesinger opens another store in the eastern part of the city.

MR. WILL. P. CLARK, the popular pharmacist of Alpena, who has been located in Lapeer for the last few months, has decided not to "go it alone," at least for the present, and has accepted a position in Knill's pharmacy in Port Huron.

A. E. CHANTLER & Co., druggists on Michigan avenue, have filed a chattel mortgage in favor of Wm. Johnston & Co. for $500, to secure their indebtedness to this amount.

MR. ERIC VON NOSTITZ, of Detroit, formerly one of James E. Davis & Co.'s most successful salesmen, will shortly open a pharmacy of his own on Beaubien street. Mr. von Nostitz has been connected with the firm of Williams, Davis, Brooks & Co. since their amalgamation. He has the best wishes of his numerous old-time customers throughout the State, and will doubtless prove as successful behind the counter as he has hitherto been on the road.

JOHNSON, NELSON & Co. contemplate making extensive additions to their laboratory, and it is not improbable that they will erect a new factory, as their present one is inadequate to meet the demands of their growing business. The growth of this young firm is something phenomenal, and it is in a large measure due to the "get there" abilities of Mr. Edwin H. Nelson. It is doubtful if there is another manufacturer of prominence in the country who is so universally popular with the trade in general as Mr. Nelson, and one of the main reasons for this popularity lies in the fact that for many years he was himself a retail druggist and thoroughly understands and sympathizes with the wants and desires of the retail trade. His present success is the result of his own unaided push and ability, and shows what may be accomplished by a druggist who has energy, a thorough knowledge of his profession, and a determination to overcome obstacles. His career is worthy of emulation by every pharmacist in the land.

The suit for $100,000 damages brought by the California Fig Syrup Company against a non-secret firm of Detroit promises to stir the animals up and afford the wise and prudent druggist a great deal of amusement. The retailer has double cause for rejoicing when his two enemies pause in their efforts to take the bread out of his mouth, and grapple in deadly combat, each striving to cut the other's throat. Sic 'em, Towser! sic 'em, Tige!

CANADA.

A MOST amusing incident has been brought to light in the Division Court recently. A Toronto druggist entered suit against a Toronto physician to recover $77 owing on a bill of drugs. The doctor had a little offset to this, in the shape of a bill for $100, part of which was for professional attendance, the balance for "*money due on prescriptions at 25 per cent discount on each.*" The physician claimed that there was an arrangement by which he was to work the members of a secret society to the mutual benefit of the doctor and the druggist. The druggist swore to the contrary, and the physician, unable to prove his case, had judgment given against him for $75. Shades of Solomon, king of Israel, and William Prince of Orange! can you keep quite cool and comfortable in the face of this? The despicable practice of assisting in the extortion of money from customers by a percentage arrangement with doctors is highly reprehensible, and no druggist with any sense of honor would countenance such a piece of brigandage; but when this is further aggravated by the prostitution of an order, professing friendship and brotherly love, to the plundering of one brother by another, and, what is worse, a conspiracy for so doing, it is high time to call the game.

In a certain Canadian town there has been a body of soldiers in camp for twelve days. During this time the regimental physicians have been kept busy prescribing Unquent. hydrargyri for a peculiar insect said to have been gathered from the blankets the men slept on. But this trouble has not confined itself to the men; the officers, with the exception of a couple of the older married men, were afflicted in the same way, and fully half the young fellows about town are buying the insecticide too. It would seem that the whole town had been under canvas from the looks of things.

BIBLIOGRAPHY.

TABLES FOR DOCTOR AND DRUGGIST. Comprising: 1. Table of Solubilities. 2. Table of Reactions and Incompatibilities. 3. Table of Doses and Uses of Medicines. 4. Table of Specific Gravities. 5. Table of Poisons and Antidotes. Compiled by ELI H. LONG, M.D., Professor of Materia Medica, Buffalo College of Pharmacy, etc. Detroit: Geo. D. Davis, 1891. Pp. 133; 8vo, muslin, $2.00.

The first table embraces eleven pages, and the table of reactions and incompatibilities nearly fifty-one. The latter is the most distinctive feature of the book, and is almost the first comprehensive effort in this direction available for physicians or pharmacists in this country. The table of doses and uses employs both the metric and conventional methods of weight and measure. It fills fifty-seven pages, and is remarkably complete. The posology must necessarily be approximative, especially in the equivalents of the two systems of measurement. The table of specific gravities includes all officinal and many unofficinal liquids. The poisons and their antidotes—twelve pages—is considerably more comprehensive than the pocket-book list upon which most physicians depend. Altogether, the work impresses one as the result of most careful and extensive research, and, considering the value of such information on occasions when time is precious and the original authorities absent, the professions for whom it has been compiled are greatly indebted to Dr. Long.

TWENTY SEVENTH ANNUAL REPORT OF THE ALUMNI ASSOCIATION, ETC., PHILADELPHIA COLLEGE OF PHARMACY, 1890–1891. Pp. 266, 8vo.

This association easily leads all others of its character in the amount of work done under its auspices, and its annual report should be esteemed as among our most valuable contributions to pharmaceutical literature.

FLORIDA STATE PHARMACEUTICAL ASSOCIATION. Proceedings of the Fifth Annual Meeting, 1891. Pp. 77, 8vo.

This association has reason to be proud of the prosperity which it has attained and of the influence it evidently exerts upon the practice of pharmacy in its locality.

CONTRIBUTIONS FROM THE U. S. NATIONAL HERBARIUM. Vol. i., No. 4. List of Plants Collected by Dr. Edward Palmer in 1890 in Western Mexico and Arizona. 1. Alamos. 2. Arizona. By J. N. ROSE, Assistant Botanist. Washington, 1891. Pp. 91 to 127 and i. to vii., 8vo.

This interesting series of Government publications is by authority of the newly created Department of Agriculture, and is a most valuable contribution to economic botany. It is handsomely illustrated with lithographic plates, and should be found in every public and scientific library.

INFORMATION WANTED.

No. 2,548.—**"Dr. King's Royal Germetuer."** Formula wanted.

No. 2549.—**Butter** [J. E.]. There are many works devoted to the chemistry of food and drink which treat of methods for testing butter. From a practical standpoint, the most useful one will be the volume of Proceedings of the Association of Official Agricultural Chemists for 1890, published by the Agricultural Department in Washington. We would also draw attention to the new and large work by A. J. Zune, "Traité général d'analyse des beurres naturels et artificiels," of which the first part is just out (published at Braine-l'Alleud, Belgium; price, 20 francs for the complete work).